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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/550,600	09/23/2005	Norbert Erhardt	66489-071-7	1969

25269 7590 07/03/2008

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EXAMINER	
MIDKIFF, ANASTASIA	
ART UNIT	**PAPER NUMBER**
2882	

MAIL DATE	DELIVERY MODE
07/03/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/550,600	ERHARDT ET AL.	
	Examiner	Art Unit	
	ANASTASIA MIDKIFF	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 March 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *22,26-31,33 and 34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *28,29,31,33 and 34* is/are allowed.

6)☒ Claim(s) *22, 26, 27, and 30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 22, 26, 27, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent to Zeller et al. (US 6,055,292) in view of U.S. Patent to Yavus et al. (US 6,292,530 B1).

With respect to Claim 22, Zeller et al. teach an x-ray system (Abstract) including an x-ray emitter (3) and having an x-ray sensitive camera (4) for the creation of dental x-ray images (Abstract), said camera including:

- a first image detector (18) for the creation of a first panoramic tomographic image (Column 2, Lines 43-46) of the upper and lower jawbones of a patient (Figure 2);
- a second image detector (18') in the form of a face sensor (Figure 3) disposed alongside said first image detector in a common casing (Figure 3) for creation of a 2D plane image (Column 2, Lines 43-46);
- means provided for the creation of 3D images of a subvolume of the mandibular arch (Column 5, Lines 1-2), which means creates several 2D images (S1 through S4 taken at multiple points P1, P2…) from different directions (Figure 6) using cone beam technology (Column 5, Lines 1-15)

with associated reconstruction algorithms (Column 5 Lines 66-67, and Column 6 Lines 1-37);

- wherein adjustment means (9) are provided for adjusting said second image detector (18') into the optical path of an x-ray emitter (3, Figure 2, Column 2 Lines 43-46, and Column 5 Lines 23-41).

Zeller et al. do not teach computing a 3D image from the 2D images.

Yavus et al. teach an x-ray imaging system (Figure 3) wherein a collection of 2D tomosynthesis projection radiographs are transformed into a 3D image of the object using cone beam technology (Abstract, and Column 5, Lines 1-15) to provide images with improved quality of images over typical tomosynthesis systems (Column 2, Lines 20-29).

It would have been obvious to one of ordinary skill in the art at the time of the invention to employ cone beam technology algorithms, as demonstrated by Yavus et al., to create 3D images from the 2D images of Zeller et al., to provide the improved image quality of a cone beam VCT system in a less expensive system, as suggested by Yavus et al. (Column 2, Lines 20-43, and Abstract).

With respect to Claim 26, Zeller et al. further teach adjustment means (1) by means of which said camera and an x-ray emitter can be adjusted such that a center of rotation lies in the subvolume to be imaged, said camera and emitter moveable as a unit (Figures 2 and 7).

With respect to Claim 27, Zeller et al. further teach that said adjustments means (9) are disposed in said casing (40) of said camera (Figures 1, 5, and 8).

With respect to Claim 30, Zeller et al. further teach that said camera is mounted for eccentric displacement (Figures 2 and 7) and, in a first position, said image detector (18) is positioned in an x-ray fan beam for the creation of a panoramic tomographic image (Column 2, Lines 43-46), and, in a second position, said image detector (18') is positioned in the x-ray fan beam for the creation of a 3D image (Column 5, Lines 1-15).

Allowable Subject Matter

Claims 28, 29, 31, 33, and 34 are allowed.

The following is a statement of examiner's reasons for indicating allowable subject matter:

With respect to Claim 28, the prior art of record teaches most of the elements of the claimed invention, including an x-ray system having an x-ray sensitive camera, comprising: a first image detector for the creation of a first panoramic tomographic image; a second image detector in the form of a face sensor disposed alongside said first image detector in a common casing for creation of a 2D plane image; means provided for the creation of 3D images of a subvolume of the mandibular arch, which means creates several 2D images from different directions and compute a 3D image therefrom using cone beam technology with associated reconstruction algorithms; wherein adjustment means are provided for moving, as desired, said second image detector into the optical path of an x-ray emitter for the creation of the respective x-ray image.

However, prior art fails to teach or fairly suggest the system wherein there is additionally an installation for the creation of teleradiographic images with another

image detector so that when said x-ray emitter is aligned for the creation of a teleradiographic image, said camera is disposed in the region of the optical path between said emitter and said image detector of said installation for the creation of teleradiographic images and is radiolucent in said region of optical path, in the manner required by Claim 28.

With respect to Claim 29, the prior art of record teaches most of the elements of the claimed invention, including an x-ray system having an x-ray sensitive camera, comprising: a first image detector for the creation of a first panoramic tomographic image; a second image detector in the form of a face sensor disposed alongside said first image detector in a common casing for creation of a 2D plane image; means provided for the creation of 3D images of a subvolume of the mandibular arch, which means creates several 2D images from different directions and compute a 3D image therefrom using cone beam technology with associated reconstruction algorithms; wherein adjustment means are provided for moving, as desired, said second image detector into the optical path of an x-ray emitter for the creation of the respective x-ray image.

However, prior art fails to teach or fairly suggest the system wherein there is additionally an installation for the creation of teleradiographic images with another image detector so that when said x-ray emitter is aligned for the creation of a teleradiographic image, said camera is moved out of the optical path between said emitter and said image detector of said installation for the creation of teleradiographic images, in the manner required by Claim 29.

With respect to Claim 31, prior art teaches most of the elements of the claimed invention, including an x-ray system having an x-ray sensitive camera, comprising: a first image detector for the creation of a tomographic image; a second image detector disposed alongside said first image detector in a common casing for creation of a plane image; wherein adjustment means are provided for moving, as desired, said second image detector into the optical path of an x-ray emitter for the creation of the respective x-ray image.

However, prior art fails to teach or fairly suggest the system wherein said second image detector is disposed on a rear side of said first image detector, in the manner required by Claim 31.

Claims 33 and 34 are allowed by virtue of their dependency upon Claim 31.

Response to Arguments

Applicant's arguments filed 31 March 2007, with respect to Claims 22, 26, 27, and 30 as being unpatentable over Zeller in view of Yavuz, have been fully considered but they are not persuasive.

With respect to Claim 22, the Applicant assets that the combination of Zeller and Yavuz does not teach that the means provided for the creation of 3D images of a subvolume creates “several 2D images from different directions and computing a 3D image therefrom using cone beam technology with associated reconstruction algorithms” because the 2D images of Zeller are taken from almost the same direction, so that combining Zeller and Yavus would produce a circular tomosynthesis system instead of a cone beam VCT. The examiner respectfully disagrees.

In response to applicant's argument that Zeller and Yavus do not teach that 2D images are taken from different directions, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

In the present case, Zeller teaches a system capable of taking several 2D images of a subvolume of a mandibular arch using a cone beam, wherein said system is capable of taking said 2D images from different directions (S1 through S4 taken at multiple points P1, P2; see Column 5 Lines 1-15), and Yavus teaches taking 2D cone beam projections to create a 3D image of a subvolume using cone beam technology and algorithms. Consequently, Zeller and Yavus are considered to teach a system capable of creating "several 2D images from different directions and computing a 3D image therefrom using cone beam technology with associated reconstruction algorithms", and the rejections of Claims 22, 26, 27, and 30 are maintained.

Applicant's arguments, see Applicant Amendment, filed 31 March 2008, with respect to the objections to Claims 28, 29, and 31 have been fully considered and are persuasive. The objections to Claims 28, 29, and 31 have been overcome by the amendment.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANASTASIA MIDKIFF whose telephone number is (571)272-5053. The examiner can normally be reached on M-F 7-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on 571-272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. M./
Examiner, Art Unit 2882
6/28/08

/Edward J Glick/
Supervisory Patent Examiner, Art Unit 2882